



# HIGH END WORKSHOP 'KARYASHALA' ON Deep Learning Methods for Real Time Applications

(1<sup>st</sup> August – 7<sup>th</sup> August 2022)

Funded by

**SCIENCE & ENGINEERING RESEARCH BOARD(SERB)-DST (GOI)**

Organised by

**Department of Computer Science and Engineering, NIT Warangal, Warangal**

## Preamble:

Accelerate Vigyan (AV) strives to provide a big push to high-end scientific research and prepare scientific manpower which can venture into research careers and knowledge-based economy. The aim of AV is to expand the research base in the country, with three broad goals - consolidation / aggregation of all scientific training programs, initiating high-end Orientation Workshops and creating opportunities for Research Internships.

ABHYAAS, a program of AV scheme, is an attempt to boost Research & Development in the country by enabling and grooming potential PG / PhD level students by developing dedicated research skills in selected areas / disciplines / fields through **High-End Workshops ('KARYASHALA') in SERB**. This is especially important for those researchers who have limited opportunities to access such learning capacities / facilities / infrastructure.

## About the FDP:

The high-end workshop Karyashala will help to disseminate the knowledge in the domain of Machine learning and Deep Learning for PG and PhD students. It empowers the participants to understand how Machine Learning and Deep Learning can be used to innovate and improve the business process and Real time applications. DL is a fast-growing field of Artificial Intelligence concerned with the study and design of computer algorithms for learning good representations of data, at multiple levels of abstraction, Object detection and Segmentation on Real time applications. Since data is overwhelming, organizations are struggling to extract the powerful insights they need to make smarter business decisions. The participants will be trained with hands-on approach in order to have an in-depth insight into the domain of AI and expose them to Feasibility & future scope.

## Major Course Contents:

- ❖ Introduction to Machine Learning and Deep Learning
- ❖ Research in Machine Learning and Deep Learning
- ❖ Introduction to Python, Python Flow Control, Python Functions, Python Files, Python Objects & Classes, Pandas, Numpy, Matplotlib
- ❖ Supervised Learning Methods, Neural Networks
- ❖ Back Propagation Algorithm, CNN, Different Models,
- ❖ Transfer Learning and Data Augmentation
- ❖ Python Iterator, Python Generator, Python Closure, Python Decorators, Python Property
- ❖ TensorFlow, Keras Google Colab
- ❖ Hands on session on NN and CNN Models
- ❖ Medical Image analysis applications
- ❖ Objection Detection: RCNN, FRCNN models
- ❖ Image Segmentation: FCN, Unet and ResUnet Models
- ❖ Hands on session on RCNN, Unet AND YOLO models with Real time applications
- ❖ GANS and Types of GANS with Applications
- ❖ Sequence Models: RNN, LSTM, Bi-LSTM
- ❖ Attention Layers and Transformers
- ❖ Hands on session on RNN, LSTM and BERT models

## Faculty conducting this programme:

The programme will be conducted by the faculty members from NIT Warangal; Academicians in the concerned field from IITs/NITs/IIITs are invited to deliver lectures in the programme. Speakers from industries are also expected to deliver as part of the course.

## How to apply:

Participants are required to fill the online registration form by clicking on the following link:

<https://forms.gle/mJU11tM6YYqR5Lq56>

## Who Can Apply

The scheme is meant to support regular **PG** level students **and early stage PhD** level Students from universities, colleges, private academic institutions, and newly established institutes in handling/troubleshooting of high-end scientific instruments and such skill development on themes required for research work.

\* The applicants must produce a letter of authentication from their supervisor/Head of the Department/Head of the Institute and No Objection certificate (NOC) for allow their student to undergo Karyashala program.

<https://drive.google.com/file/d/1844g1R8WwpI-HtZj5v8z1MuEq0h7XW1D/view?usp=sharing>

## Selection Criteria:

There is **no registration fee** for the participants for this workshop. The maximum number of students limit is 25. The list of selected participants will be intimated through e-mail.

All the selected participants will be provided **FREE boarding & lodging** in the institute guest house. And **TA (sleeper class)** will be paid for the selected participants.

## Important Dates:

<b>Last date (Application &amp; DD)</b>	<b>30.7.2022</b>
<b>Selection List by E- mail</b>	<b>31.7.2022</b>
<b>Duration</b>	<b>1.8.2022 to 7.8.2022</b>

## About NIT Warangal:

National Institute of Technology, Warangal is the first among 17 RECs setup as joint venture of the Government of India and the state government. Over the years the college has established itself as a premier Institute imparting technical education of a very high standard leading to the B.Tech degrees in various branches of engineering, M.Tech. and Ph.D programmes in various specializations. All B. Tech and M. Tech programmes of NIT Warangal are NBA accredited.

## Brief Profile of the Department of CSE:

The Department of Computer Science & Engineering was established in the year 1991. The department offers high quality undergraduate, postgraduate and doctoral programs. The Department has a team of well experienced faculty, graduated from IIT's, NIT's, Central Universities and other premier Institutes of higher learning. The department provides state-of-art research facilities to generate knowledge and develop technologies in the thrust areas of Computer Science and Engineering.

## Address for Correspondence

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